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You me and consent awareness(YMCA): using VR and immersion in narrative spaces

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- Abstract (too long – needs to be shorter and more focused)
- Introduction section would be usefully added
- Screen shots/images of the VR game might be useful
- Include a 'Discussion' section towards the end of the paper
- Include a Conclusions and Future Research' section at the end of the paper. As it stands the paper ends too suddenly

Abstract

Needs adding

Key words: sexual consent, virtual reality, immersion, choice

Introduction

This paper will discuss a collaboration between students and academics from the School of Computing and Creative Technology and Youth and Community Studies. Together we have produced a prototype VR (Virtual Reality) game to raise awareness about sexual consent and how it is secured. This is both an emergent and timely topic, which is being addressed in a number of pedagogical ways, but we felt a GBL learning approach has the potential for greater impact. Developments in computer visualisation in particular AR (Augmented Reality) and VR (Virtual Reality) technologies have given rise to new opportunities in the field of usability studies and specifically, how this relates to the field of Cognitive Ergonomics, Experience Design and 'immersion' within narrative spaces. Recent studies at MIT and Stanford University's Virtual Human Interaction Lab, suggest that VR or 'immersive experiences' can assist in building empathy in those learners and users from various perspectives, and within given narrative scenarios. The narrative we developed focussed on the subjective nature of sexual consent and misinterpreted social cues within a fictional encounter. The scenario was chosen as a response to the growing evidence highlighting the rise in the number of female and male students reporting sexual assaults on university campuses. The project was developed as a response to the growing evidence highlighting the rise in the number of female and male students reporting sexual assaults on university campuses. The narrative was created in dialogue with students and because of the project team's commitment to develop a practical real-world intervention with the potential to positively influence knowledge, attitudes and behaviours.

The paper will examine how we developed the narrative structure of the game, before moving on to reflect on issues emerging from the development of the VR prototype. In the discussion section we will highlight ways in which:

- Game Based Learning assists and evaluates choice within a given scenario about the importance of negotiating sexual consent
- Develops Interactive Narrative within Immersive/Mixed Reality Environments (MR)
- Uses of 360 Video Production and Potential Aesthetic & Immersion Constraints
- Best practice in creating learning artefacts for training and teaching within course

Negotiating sexual consent

Recent years have seen a resurgence of public discussions and (moral) panics about a range of pornography-

related topics, the expansion of pornography across the internet, its putative links to rape and sexual violence, and erotic life-styling or the oft-cited 'sexualization' of culture. Over the last few years we have witnessed a rise in examples of rape culture which have forced us to reconsider and question the effectiveness of the current teaching around sex and relationship education in secondary schools. Whilst giving or obtaining clear consent is the golden rule, often, the meaning of sexual consent for young adults is far from clear. The current state of confusion is evident in the numerous competing views about what constitutes agreement (grudging acceptance or eager desire?) and what comprises performative consent (passive acquiescence or an enthusiastic "yes"?). Interventions and resources are being developed as educators globally take stock of the severity of this issue, which in some circles is even being referred to as a pandemic. The National Union of Students (NUS) has initiated a campaign to heighten awareness of the issue. The I heart consent (<http://www.nusconnect.org.uk/liberation/women-students/lad-culture/i-heart-consent>) is an educational programme, which has piloted consent workshops as part of a wider programme to prevent sexual harassment and assault across twenty campuses. The YMCA project seeks to make a positive contribution to this campaign by designing a game using Virtual Reality.

Students as producers:

At the start of the process we recruited a group of students because it was important to the construction of the game that the scenario was a) believable, and b) recognisable by other young people of similar ages. For the prototype to work we needed to create an immersive experience, which offered choices, but ultimately would have an educational function. It was therefore crucial to the success of the project that we recruited a group of students to guide us. The current project is informed by the idea of 'students as producers', an idea developed over the last decade by a team at the University of Lincoln. Neary (2010) argues that as neoliberal globalisation has come to dominate the educational agenda students have been encouraged to see themselves primarily as consumers; a method of learning Paulo Freire (1970) describes as 'banking education' a process which treats students as empty vessels to be filled with knowledge. Recasting the student as agents of their own learning re-invigorates the whole educational process and allows for new configurations and collaborations. Working collaboratively with students as we did in the YMCA project, we promoted a different kind of learning fulfilling both social and educational needs. By valuing the knowledge and experience of learners creates a synergy between theory and research, a process endorsed by progressive educational theorists Dewey, for example, argues that for learning to be effective it needs to be based on the learner's experience (Dewey, 1902). He maintains that learning is merely symbolic if there is no relationship between the learning and a person's experience. By situating students within this pedagogical process, one which they can understand through their own meaning and purpose, Vygotsky (1997) argues that the production of knowledge does not present itself as already discovered and static, but as uncovered by the learner themselves through 'the dynamic context of its own appearance'.

Virtual Reality:

Literature on gamification often stresses that the judicious, strategic, and appropriate use of game elements can produce a learning characterized by a high level of active engagement and motivation, which in turn produces positive outcomes in cognitive, emotional, and social areas. Increasingly serious games are being used in educational contexts as technology advances and educators strive for increasingly diverse and interactive tools. Digital technology offers great potential, however as Whitton and Mosely (2014) counsel getting it right is key to the potential success of the game. Although the use of VR could be considered creative as a teaching and learning tool, that alone does not capture the potential of this project as creative teaching is analogous to creativity in any domain as it inevitably involves, combining existing knowledge in some new form to get a useful result. As Amabile (1996) suggests:

"A product or response will be judged creative to the extent to that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic

rather than algorithmic". (p29)

At the start of the process we recruited a group of students because it was important to the construction of the game that the scenario was a) believable, and b) recognisable by other young people of similar ages. For the prototype to work we needed to create an immersive experience, which offered choices, but ultimately would have an educational function. The topic of consent, the macro narratives in which it sits and the medium of virtual reality (VR) gaming were initially introduced to students during a module at the start of their academic journey at the University. This gave *fresher* students a sociological framework within which to understand the complexities and parameters of sexual consent and engage in open dialogue primarily to explore their own understanding and experiences.

The initial curriculum based sessions with students affirmed a core group of 15, all of whom were women and included students undertaking a sociology degree. Three all-day workshops were subsequently organised.

The first workshop identified student's own definition of consent:

"sexual consent is respecting the person's right to say no"

"giving consent means you are comfortable with what you are doing"

This workshop also reaffirmed the heuristic intentions as it drew out their knowledge and subjective experiences of knowing someone, or they themselves being in situations or scenarios which they referred to as 'risky' or '*potentially non-consensual*'.

The workshops revealed, that despite massive and ongoing campaigns to redress gender inequalities, on the issue of sexual violence women remain at the centre of victim blaming. This was framed this in an understanding (for themselves and 'women' more broadly) understanding of the widespread popular acceptance of the traditional sexual double standard: that sexual behaviour which is acceptable for men is unacceptable for women. Gurnham (2016) terms this the "rape myth acceptance and victim-blame". In purporting that 'real rape' involves a pathological stranger who unleashes a 'blitz'-style attack outside, at night and using overwhelming force", he anticipates that "a woman who is raped or sexually assaulted in circumstances that run counter to that stereotype" (p259), may become the bearer of a degree of responsibility if she did not effectively communicate '*no*' consistently and clearly throughout all engagements with her 'rapist'. The workshop revealed that our students concurred, and thus communicated to us that the VR role-play game not only raised awareness of the complexities of consent, but also offered 'players' clear teaching/learning moments throughout. They were clear that for the game to be successful players would require alternative scenarios (branching options) which would mean that no-one would be forced into a position against their will. By incorporating this idea into the overall objectives of the project, students envisaged that the game should be much more than a straight forward teaching and learning medium and could, as Newman and Holzman suggest (1993), "contribute to the ethical and political transformation of the social world."

In workshop 2, students developed their favoured scenario which they called "Netflix and Chill", this being 'youth speak' for come over to my place and let's see where this goes. This is one of the reasons we needed the student's involvement as it has become clear by the responses the title that everyone of the target age group immediately understands the context.

In this workshop we introduced the VR technology to develop a better understanding of its potential. The students were actively engaged in the writing of a realistic and recognisable scenario and script which would be relatable for the majority of *freshers*. In the script writing stages, it became evident that this scenario fell firmly within Gurnhams' "rape myth acceptance and victim-blame" (2016) as it included ambivalent situations, the woman drinking, (alcohol); the context of the frisson, (a public space or a private setting like a fellow student's house and/or bedroom); dress; and the interpretation or misinterpretation of cues. They felt that a

key takeaway from the narrative (script) and ultimately the game itself, was that no-one should be pressurised into doing anything 'they didn't feel comfortable with'. It was therefore important to get the right tone throughout, in order that we could reinforce positive messages; that play is fine, that engaging in sexual relations is ok, but everything must have agreed consent at its centre. To underline this message, at various points during the scenario, the 'player' would be able to 'choose' an option (a branch) and thus direct the flow of the engagement. The students wanted to highlight the multiple stages where consent would be required. For example, if there was no clear consent given or even where "no" had not been clearly articulated, students wanted to highlight that this did not mean an automatic 'move to the next base'. In utilising the technology of VR to this end, the user does not only have to reflect and negotiate what they were experiencing whilst immersed in the scenario, but they are also given choices and responses throughout the game. In this way, anyone playing the game will be able to reflect on their choices.

Why Use Virtual reality for learning?

Previous research from the authors of this paper into 'To what extent can Virtual Reality transition prospective students into a University Environment?' produced interesting results into the opportunities of learning in VR that were utilised and expanded on for the purposes of the consent virtual reality prototype, specifically evidencing the use of VR as a learning tool.

This test produced universally positive results focusing on VR as a tool for learning about more complex subjects, complex equipment or tools. This positive reaction helped re-enforce our choices around the utilisation of virtual reality within the consent prototype. Below is a discussion of the most pertinent findings, and the ones which are most relevant to the 'consent project'

Findings

Using the Virtual reality lecture demo as reference, would you feel comfortable learning in a VR environment?

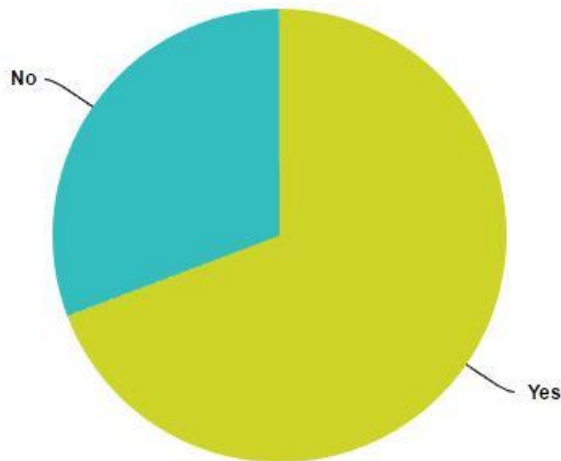


Please briefly explain your answer;

It would've been a fun experience and would've got us all talking to each other

Do you think the VR lectures or teaching would benefit from being in more accessible formats, such as gear VR or smartphone VR compatible?

Answered: 13 Skipped: 0



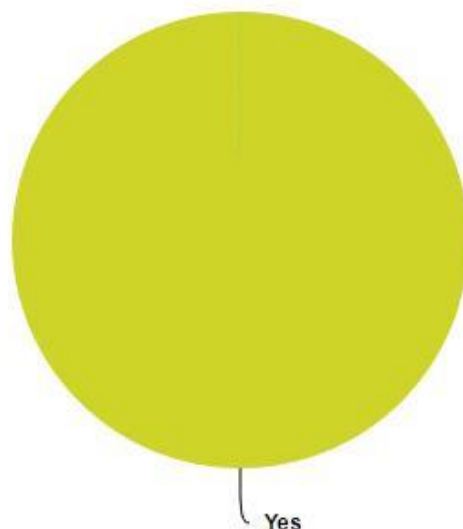
If 'yes' please explain your choice

'We pretty much all have smartphones that VR can play on'

'If it's more accessible, then more people might be willing to learn in a VR environment and possibly benefit from it as opposed to other means, however, I don't really think too many students are going to want to go through the effort of setting themselves up a VR environment just to learn, despite how accessible it may be.'

Do you feel VR training lectures or introductory sessions before subjects may help prime students for more difficult subjects or complex equipment/tools

Answered: 13 Skipped: 0

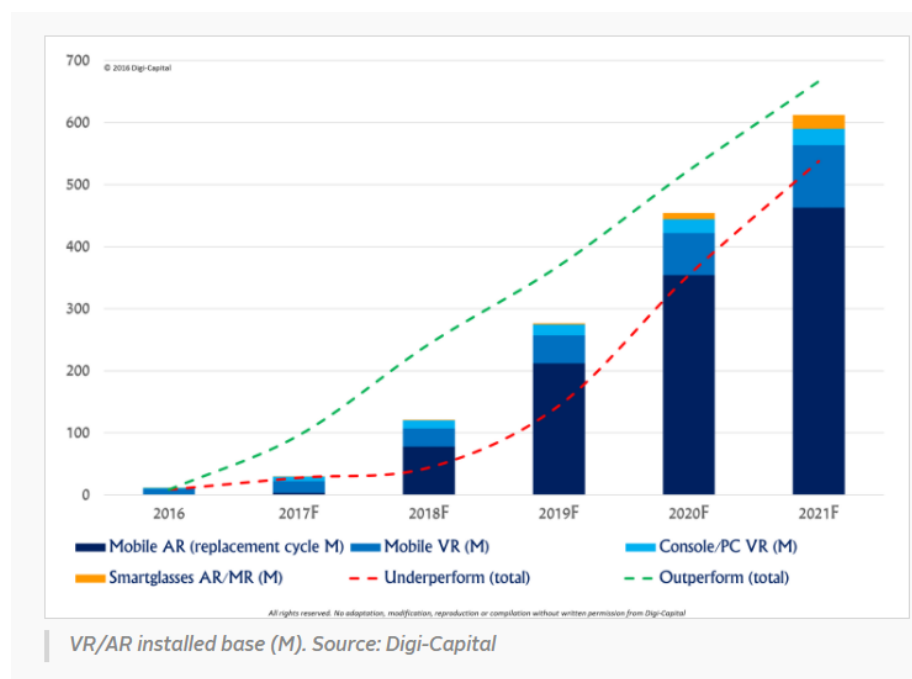


If you are able to think of any other areas of academia you feel VR may be useful in from an academic point of view, please make notes below.

'I think VR could be used in almost any course that has some visual learning included, a lot of diagrams and stuff are used in STEM so you could use VR to show a building's structure and infrastructure, chemical compounds and reactions on a molecular level, organ diagrams and other various systems. I definitely think it'd be useful for visual learning of any kind, an example I could think of is a teacher talking about 3d modelling and then using VR to show people 3d models.'

An important positive reaction was noted in relation to the question of more accessible VR formats as opposed to the prototype only being available on the HTV VIVE headset, which requires extensive set up including an exclusive corralled space in which the VR user is allowed to move.

If we consider *The reality of VR/AR growth* (Merel, T. (2017)), the predictions for 2021 are a future where Mobile/smartphone VR/AR dominate the market – and this will be discussed in future considerations.



Smartphone ownership penetration in the United Kingdom (UK) in 2012-2016, a. (2017). *Smartphone ownership by age 2012-2016 | UK Statistics*. [online] Statista. Available at: <https://www.statista.com/statistics/271851/smartphone-owners-in-the-united-kingdom-uk-by-age/>

Our interest in using VR stems from the proliferation of cheap and accessible assistive computer visualisation technologies (i.e. sensory 'addition' in visual impairment and augmenting every-day experiences), but not just the accessibility, the technology equally can help to develop areas of complementary investigation within the context of MR (Mixed Reality) social & technologically mediated space. Immersive display technologies, and sharing space with 'virtual humans' and providing a sense of 'agency' in augmented real-world or virtual world environments were of key interest for the team. An important parameter and objective was to consider how subjects (users of the training application) would respond to the VR experience, and how immersion within an artificial/VR environment may impact their decision-making or enhance learning. Introspective awareness, or embodied presence through responding to stimulus (visual, physical and emotional) is fundamental the sense of engagement in MR spaces. Some signals (stimulus) can be easily perceived and are associated with strong effective feelings (fatigue, fullness or pleasant social contact) others can be vaguer (i.e. if an entity is not trustworthy). Changes in bodily sensations provide emotional motivation and can guide decision-making (Heeter 2016).

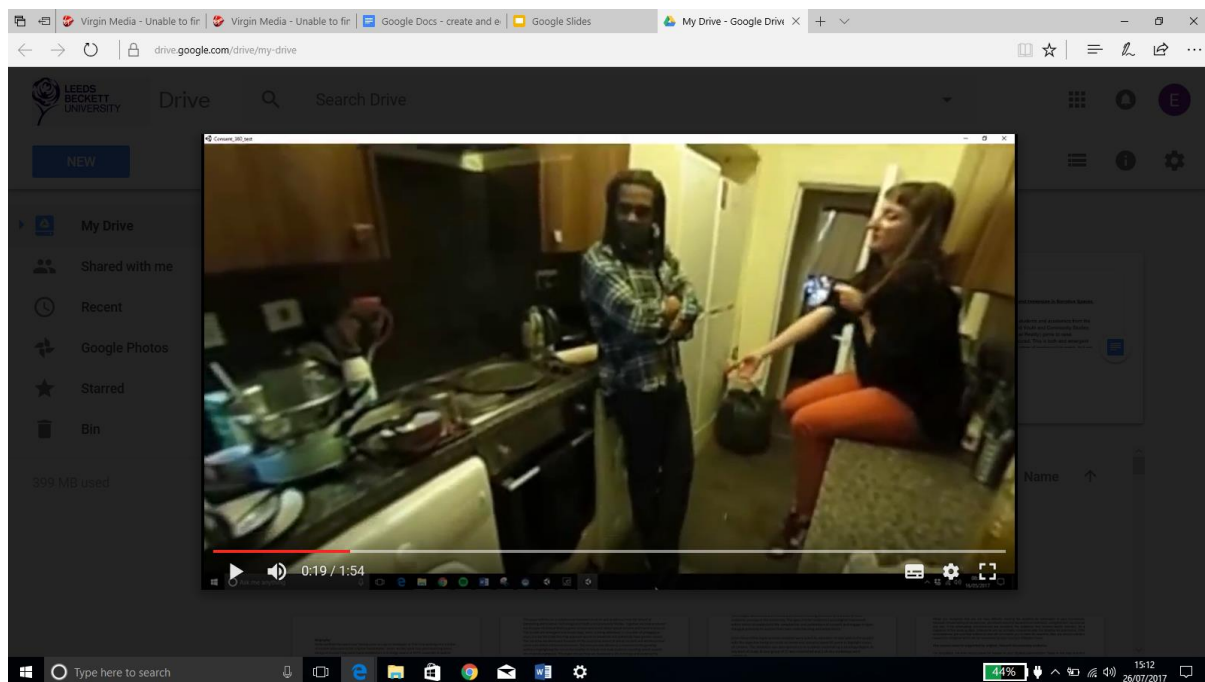
Discussion

To explore the potential for VR, a prototype artefact was created to isolate and address real and perceived issues with delivery of the content. The goal was to further enhance user immersion with a view to a seamless/interactive experience for the user and the notion of empathy within the given narrative scenario. Although consent awareness is not gender or sexual orientation specific, for initial practicality, the prototype was filmed with a male & female character in a student house scenario, projected from the female's perspective.

The initial approach was to create an immersive experience using real actors filmed with a 360 camera that would position the user in a 'first person perspective' (a perspective/point of view commonly used in video game based scenarios) in which the user would be presented with a number of consent based questions. User choices would open additional and consequential avenues within the experience in a 'branching narrative' format. The choices would ideally be presented in a format that was unobtrusive or deliberately vague using 'subjective' options to avoid obvious and binary choices. The issues highlighted and research discoveries within the prototype would be isolated and addressed within a proposed updated artefact.

Developing the script & scenario

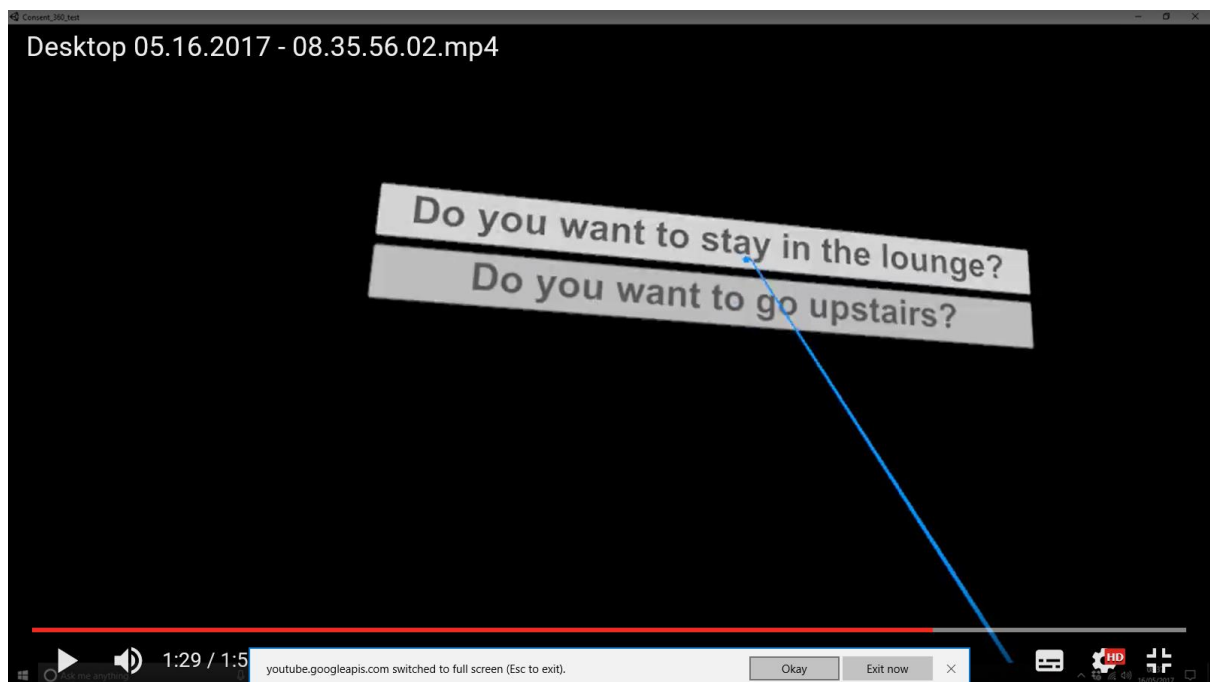
As a starting point, it was vital that the script be 'believable' and impactful from the viewpoint of the age groups that the prototype was targeted. A first draft of the script was improvised and performed by students from the School of Health & Community Studies under direction from the authors of this paper. The script focusses on events in a student house between male and female students returning to home to watch a film 'as friends'. Once this first draft was complete peer review was sought from the target groups (in this case students) who reported in feedback that it was fairly 'true to life'. This script was then handed over to the Games Design department to implement within a functional 'experience'



Converting the script to a VR experience

The following stage was to advance the draft script into an immersive experience by building consent based questions into the context of the scenario. For example; 'would you like another drink', 'would you like to go upstairs' etc. As previously highlighted, it was vital questions were not posed as leading or binary in their construction and delivery to enhance the sense of real conversational flow and interactions. Within this initial phase, we identified issues:

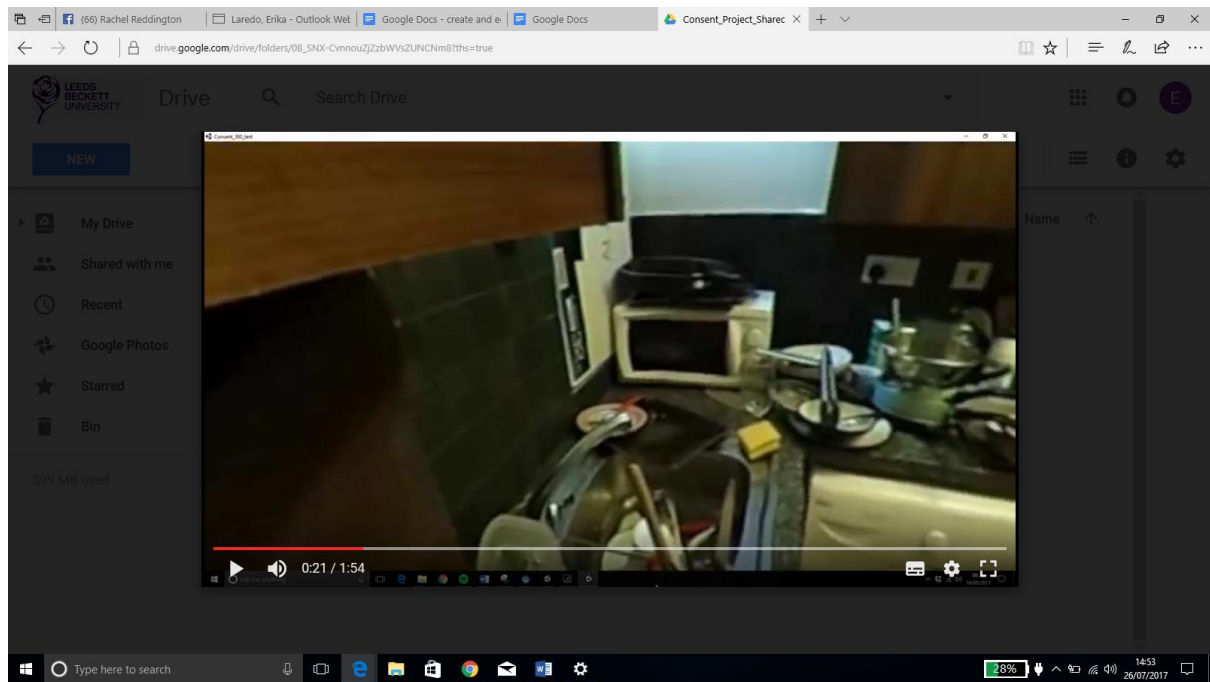
- (i) Despite members of the game team being present during the initial improv sessions, it became clear when 'converting' the script to a branching narrative experience, the questions were not focussed and directed around 'one' specific person experiencing these consent issues – i.e. questions were framed in a typical 'two header' script format where both participants asked each other questions during the course of the script.



This became an issue as for the purposes of experiencing one character's perspective, it had previously been decided the experience would be directed from the view of one performer (first person perspective) who would be wearing the 360 camera. This was corrected in the shooting script (with some perceived loss of 'realism') with questions being directed at the user, and the choices becoming available via an overlaid user interface.

Location shoot and VR filming

The filming took place at a student house for purposes of cinema veritas, and featured two actors as described. The footage was shot on a theta 360 camera where the image field is 'stretched' and mapped onto a sphere that encompasses the users field of view. For the shoot, we utilised both a tripod and a head mounted harness to replicate the viewpoint of the protagonist. For purposes of completeness, we shot all scenes (repeated) from tripod, and harness from both actor viewpoints.



In this process we identified following issues:

- (ii) Shooting in 360 presents a number of problems, as the camera captures everything within the field of view it's placed within. This in turn negates use of anything other than natural lighting or special bulbs designed for the purpose; unwanted props, notes, or actor marks are also visible.
- (iii) Due to shooting day for night (or early evening) it was required that windows, etc. be blacked out. It was assumed at a resolution of 1280 * 960 per eye that these would be visible, but due to the conversion resolution of the footage adapted from the Theta camera, the scene was somewhat 'blurry', and improvised light blockers not evident.
- (iv) When utilising the tripod, there was a question as to where to place the camera in a scene. A set up 'two header' was required for the first scene, and the camera was placed two feet away from the actors, on a worktop in the corner of the kitchen. Although aware that this would result in one of the directions of the shoot facing a wall, this was not perceived as an issue, as extensive user testing of similar projects within VR points toward the user tending to focus on a 180 arc in front of them, which was reiterated during testing of this artefact. The immediate (unexpected) concern was that two feet amplified within VR, gave the impression of the actors being much further apart and as a result prevented reading of their facial expressions and emotions during their spoken delivery, countering a sense of immersion.
- (v) Rear vision was (or the ability to look behind them) we found was not a common issue as users would be able to clearly see what would be assumed to be 'peripheral vision', as well as their tendency to look down to see what is below. However, in the case of the tripod shots, this resulted in what appeared to be some abnormally enlarged kitchen implements! This was also more prominent when the actors utilised the head harness for the camera – not only did this result in an odd and uncomfortable POV (i.e. above normal eyeline), but looking down in this setup resulted in a view of the harness and the top of the actor's head. Regarding this, constraints in controlling a user's field of vision will be explored in later prototypes and how this may impact immersion.

Post-Production, editing & user interface

Editing provided several useful insights in the post-production process. Due to the live action nature of the shoot, a common grammar of film and television was expected. Within a normal 'flat' 2D scenario, an initial establishing shot of the two characters would be customary practice. Within a VR/3D context this mechanic is impractical, but without which you would be unaware of the character you would be 'playing'. User testing would need be sought to establish if this mechanic /visual grammar is necessary or the alternatives that could be explored.

Conclusion and future developments

This paper has discussed how Virtual Reality can be used as a vehicle within GBL as well as exploring some of the constraints and challenges in developing assistive and interactive technologies. Future development and research would potentially include how immersion or 'presence' in VR can effect/impact on behavioural change in participants, with a view to evaluating hazard awareness in given social scenarios. Additionally, the function of eye-movement and tracking in VR spaces, and how this could be evaluated as well as 'directed' to facilitate increased awareness of social/visual 'cues' or danger/risk indicators within virtual environments.

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